



THE PROMISE OF

MEGA REGIONS

How **Scaling Up** Could Help Combat
Today's Most Urgent Challenges

By Matt Jenkins

IN NORTHERN CALIFORNIA, three regional agencies representing some 11 million people are banding together to address long-term transportation planning issues. In the Northeast, a dozen states are collaborating on an effort to bring down greenhouse gas emissions. And in other places across the United States, from the Southwest to the Midwest, governments and organizations in large metropolitan areas are using regional strategies to address challenges that cross jurisdictional boundaries.

It's an approach that planners have been encouraging for some time, as expanding U.S. metro areas seemed increasingly destined to merge. Jonathan Barnett remembers attending a conference in London in 2004, and watching as maps of expected urban growth and regional development in the United States flashed onto a screen. At the time, Barnett was the director of the Urban Design Program at the University of Pennsylvania. He and his colleagues had been pondering the implications of Census Bureau projections that the U.S. population might grow 50 percent or more by 2050, an increase of more than 100 million people.

"What popped out at everybody in the room was that there was a pattern emerging in the maps of where these people were going to go," Barnett says. "You can see [these urban patterns] from space, and it's a little like looking at the stars and seeing Orion and Sagittarius. We realized that something important was happening."

Bob Yaro was in the room that day, too. "You could see that, across the country, the suburbs of one metropolitan region were merging with the suburbs of the next metropolitan region," recalls Yaro, who led the Regional Plan Association at the time while teaching at the University of

Pennsylvania. "Physically, these places were becoming integrated with each other. And then when we looked at economic and demographic trends, you could see that in fact the lives of these cities and metropolitan areas were merging with their neighbors."

This was hardly the first time that geographers and planners had taken note of the way linked metropolitan areas can share economies, natural resource systems, infrastructure, history, and culture. But by the turn of the 21st century, the scope and pace of the phenomenon were reaching new levels in the United States.

Not long after the conference in London, Armando Carbonell—who retired from the Lincoln Institute this year after leading its urban planning program for more than two decades—gave the phenomenon a name that would stick: megaregions.

A band of planners, including Yaro, Barnett, and others, has picked up the banner of megaregions, arguing that these urban areas have an outsize importance nationally. "More than eight in 10 Americans live in these places, and it's over 90 percent of the economy of the country," Yaro says. "So it's very clear that if these places don't succeed or aren't operating at their full potential, the whole country's economy and livability will suffer."

"More than eight in 10 Americans live in these places, and it's over 90 percent of the economy of the country. So it's very clear that if these places don't succeed or aren't operating at their full potential, the whole country's economy and livability will suffer."

What Constitutes a Megaregion

For more than a century, the heavily populated region stretching from Boston to Washington, DC, has drawn the attention of geographers. In his 1915 book *Cities in Evolution*, Patrick Geddes gave the swath of urban development running from Boston to New York the decidedly unlovely term “conurbation.” In 1961, French geographer Jean Gottman called the region a “megalopolis.” And in 1967, Herman Kahn gave the whole corridor the equally unlovely name “BosWash.”

It would take another three decades before these boundary-busting phenomena began receiving more comprehensive academic attention, but the pace has been picking up over the last 20 years as the University of Pennsylvania, the Lincoln Institute, and others have worked to advance people’s understanding of what megaregions are and how they function.

Definitions vary of what, exactly, constitutes a megaregion, but they are generally defined as regional economies that clearly extend beyond an individual metropolitan area. “I think of megaregions as a way of thinking about space, more than as real things that are out there,” says Carbonell. “I see it as a construct and a tool, [but] megaregions are not fixed and they change.”

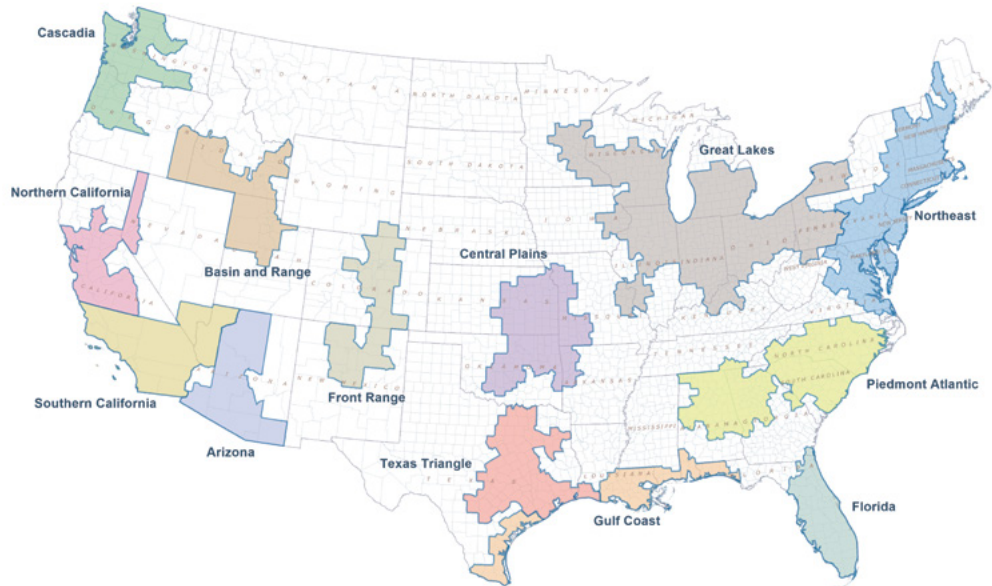


Credit: Drazen via iStock.

This spring, the Lincoln Institute published *Megaregions and America’s Future*, by Robert Yaro, president of the North Atlantic Rail Alliance; Ming Zhang, director of Community and Regional Planning at the University of Texas at Austin; and Frederick Steiner, dean of the University of Pennsylvania’s Stuart Weitzman School of Design. The book argues that megaregions can, if properly and creatively governed, strengthen climate resilience, natural resource management, economic competitiveness, and equity at the local, regional, and national levels.

Learn more at www.lincolinst.edu/publications/books/megaregions-americas-future.

The 13 U.S. megaregions identified in the recently published Lincoln Institute book *Megaregions and America’s Future*. Credit: Ming Zhang.



Researchers have used a variety of innovative approaches to identify and delineate individual megaregions. One analysis looked at the commuting habits of more than 4.2 million Americans to identify megaregions (Nelson and Rae 2016). Another used satellite imagery to identify contiguously lighted urban agglomerations across the globe, then—with a sort of Seussian whimsy—gave those places names like So-Flo, Chi-Pitts, Char-Lanta, Tor-Buff-Chester, and Am-Brus-Twerp (Florida, Gulden, and Mellander 2008). To estimate economic activity in each megaregion, that study combined the satellite-imaged light footprints with population and GDP data, extrapolating a “Light-based Regional Product.” It also used the number of patent registrations and highly cited scientific authors in each megaregion as a measure of technological and scientific innovation.

At this point, researchers have identified about 40 megaregions around the world (see sidebar). In *Megaregions and America’s Future*, the authors focus on 13 megaregions in the United States (see map). Those are the venerable Northeast; Piedmont Atlantic, a southern stretch that includes sections of Georgia, Alabama, Tennessee, and the Carolinas; Florida; Great Lakes; Gulf Coast; Central Plains; Texas Triangle; Front Range in Colorado; Basin and Range (Utah and Idaho); Cascadia (the Pacific Northwest from Portland to Vancouver, BC); Northern California; Southern California; and Arizona’s Sun Corridor (Yaro, Zhang, and Steiner 2022).

Many of these megaregions have economies that put them within the rankings of the world’s biggest national economies. In 2018, for example, the Northeast megaregion had a GDP of \$4.54 trillion—more than that of Germany. The same year, the nearly \$1.8 trillion GDP of the Southern California megaregion was larger than that of Canada.

In many ways, a megaregion is an increasingly spontaneous and organic unit of organization, one that presents more opportunity than the traditional political divisions that it transcends.

MEGAREGIONS AROUND THE GLOBE

Scholars have identified more than 40 megaregions around the world, and several more are rapidly forming in China, India, and Southeast Asia. Established megaregions include:

Pentagon, Europe. This region, whose outlines are defined by Paris, London, Hamburg, Munich, and Milan, was identified as an economic and transportation hub in 1999. It covers about 20 percent of the continent and is responsible for 60 percent of its economic output. Several other megaregion models have also been applied and explored in Europe.

Tokaido, Japan. The corridor between Tokyo and Osaka is home to more than half of the country’s population. Its cities are linked by the Shinkansen high-speed rail network, which has reduced travel time between Tokyo and Osaka from eight hours in the early 20th century to two and a half hours today; a bullet train in development will further reduce the trip to one hour.

Pearl River Delta, China. The most densely populated urban area in the world, the Pearl River Delta includes Guangzhou, Shenzhen, and Hong Kong. The Chinese government has invested several hundred billion dollars in high-speed rail designed to strengthen connections within and among the Pearl River Delta, Yangtze River Delta, the region around Beijing and Tianjin, and burgeoning megaregions in coastal and inland areas.

A high-speed Shinkansen train in Japan. Credit: Yongyuan Dai via iStock.



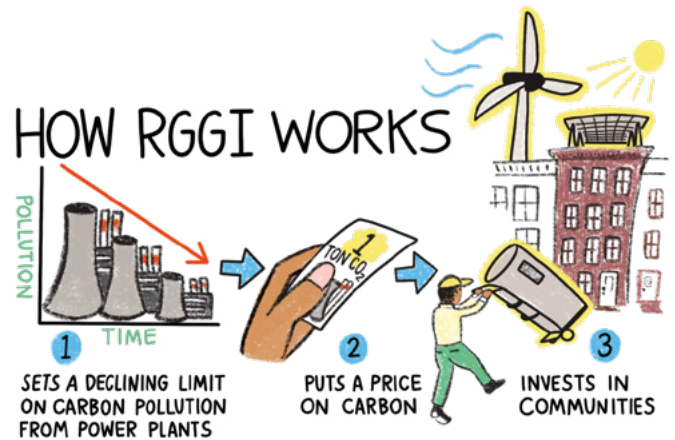
Collaborating to Mitigate Climate Change

One of the most prominent examples of successful initiatives that span a megaregion is the Regional Greenhouse Gas Initiative (RGGI), a cooperative effort to cap and reduce power sector carbon dioxide emissions in New England and the Mid-Atlantic. Known in shorthand as “Reggie,” it is the first mandatory cap and trade program for greenhouse gas emissions in the country and now spans 12 states.

At the turn of the 21st century, efforts to establish a national cap and trade framework for greenhouse gas emissions were fizzling. In 2003, then–New York Governor George Pataki sent a letter to the governors of other states in the Northeast proposing a bipartisan effort to fight climate change. In 2005, the initial agreement to implement RGGI was signed by the governors of Connecticut, Delaware, Maine, New Hampshire, New Jersey, New York, and Vermont. In 2007, Massachusetts, Rhode Island, and Maryland signed on.

“I think for the states that recognized that climate change was real and a problem, there was a desire and an appetite to take some leadership,” says Bruce Ho, who heads the Natural Resource Defense Council’s work on RGGI. “Climate change is a global problem, and we need to be acting as much as possible in a coordinated way. But at the same time, there’s a recognition that you have to start somewhere.”

Even as climate change efforts at the federal level foundered, RGGI got stronger and expanded. In 2014, the participating states reduced the emissions cap by 40 percent and committed to further year-by-year reductions. Then in 2017, the states agreed to aim for an even steeper



The Regional Greenhouse Gas Initiative, a carbon trading program that spans a dozen Northeast states, has been called a model for the nation. Credit: Jessica Russo/Natural Resources Defense Council.

decline in emissions, and also agreed to extend those emissions reduction efforts through at least 2030.

Since RGGI began, power plant emissions have decreased by more than 50 percent—twice as much as the national decrease during the same time—and the program has raised over \$4 billion by auctioning carbon allowances. That money has been invested in local energy efficiency programs, renewable energy, and other initiatives. Virginia, for example, dedicates half of its RGGI funding to low-income energy efficiency programs and puts 45 percent toward flood preparedness and sea-level rise mitigation in coastal communities.

While not immune to criticism, RGGI is “an early example of a megaregion-scale initiative that has held up quite well,” says Carbonell—and it continues to gain momentum. Although then–Governor Chris Christie withdrew New Jersey from RGGI in 2012, the state rejoined in 2020. Virginia joined in 2021, and Pennsylvania followed this year. Leaders in North Carolina, spurred by a citizens’ rulemaking petition, are now considering joining RGGI as well.

Since the Regional Greenhouse Gas Initiative began, power plant emissions have decreased by more than 50 percent—twice as much as the national decrease during the same time—and the program has raised over \$4 billion by auctioning carbon allowances. That money has been invested in renewable energy, flood preparedness, and other initiatives.

Hopes for High-Speed Rail

One of the key challenges of megaregions is how people get around within them. Because megaregions can run 300 to 800 miles across, they demand an approach to transportation that has largely been ignored in the United States.

“They’re too small to be efficiently traversed by air, and too large to be easily traversed by road,” Yaro says. “And then on top of that, the airports, airspace, and the interstate highway links in these places are highly congested.”

Putting a new emphasis on high-speed rail, which can reach speeds over 200 miles per hour, will help relieve a transportation system that is under strain nationwide, says Yaro, who is now president of the North Atlantic Rail Alliance, a group advocating a high-speed and high-performance “rail-enabled economic development strategy” for New York and New England. In addition to reducing congestion, high-speed rail can decrease emissions; it can also spur economic development by connecting people with jobs and other opportunities throughout a region.

Plenty of successful examples of high-speed rail systems exist worldwide. In Japan, for example, the world’s first high-speed rail line—the famous Shinkansen, or bullet train—has linked Tokyo, Nagoya, and Osaka into a single megaregion. The system, which now carries over 420,000 passengers each weekday, will mark its 60th year of service in 2024. In Europe, nine countries now operate high-speed rail on more than 5,500 miles of track. Perhaps no country has embraced high-speed rail as enthusiastically as China. Since just 2008, its government has built a system that reaches practically every corner of the sprawling country on more than 23,500 miles of track—and counting.

In the United States, an early realization of the concept’s potential has been slow to gain traction. In 1966, U.S. Senator Claiborne Pell of Rhode Island proposed a high-speed line between Boston and Washington in his book, *Megalopolis Unbound: The Supercity and the*

Transportation of Tomorrow. In 2000, Amtrak started Acela service between Boston and Washington. Because it reaches 150 miles per hour, it qualifies as high-speed rail—yet it hits that upper limit over only about 34 miles of the 457-mile route. The Acela’s average speed is just 70 miles per hour.

Plans for intercity high-speed rail have been considered or are underway in other regions; the Texas Central Line would connect Dallas and Houston, while the Brightline West project would link Southern California to Las Vegas. Elsewhere in California, construction is underway on an ambitious line that will connect San Francisco and Los Angeles, with a second phase extending the line north to Sacramento and south to San Diego. But challenges related to funding, politics, and logistics have meant that high-speed rail has barely made it out of the blocks.

Early versions of last year’s infrastructure bill included \$10 billion for high-speed rail, but that was cut during negotiations. While proponents keep pushing for meaningful federal investment in a high-speed network, megaregions can also benefit from investments in existing systems—or “fast-enough rail,” as Barnett dubs it in his book *Designing the Megaregion*: “There are many transportation improvements that can be made incrementally to give a much better structure to the evolving megaregions” (Barnett 2020).

Members of the “I Will Ride” campaign, which educates students about high-speed rail in California, at a spring 2022 STEM competition. Credit: California High-Speed Rail Authority.



Sharing Solutions in California

The Northern California Megaregion extends across the cities of the San Francisco Bay Area, Sacramento, and the San Joaquin Valley. The region has seen a dramatic increase in commuters from inland communities like Tracy and Stockton to jobs in the Bay Area, and has some of the nation's longest average commute times.

James Corless heads the Sacramento Area Council of Governments, but previously worked for the Metropolitan Transportation Commission, the agency responsible for planning and financing regional transportation in the Bay Area. In the mid-2000s, he says, regional agencies began looking at the swath of cities running from the Bay Area to Sacramento as an emerging megaregion, and gave it a name that put it squarely in the ranks of places like So-Flo and Char-Lanta. "We actually coined the phrase 'San Framento,'" Corless says. "Everybody hated it. But it got people's attention."

"At first, we were struggling a little bit to find our focus," Corless says. Gradually, though, the participating entities began asking a simple question: "Where are we stronger together?"

In 2015, the Metropolitan Transportation Commission, Sacramento Area Council of Governments, and San Joaquin Council of Governments signed an MOU to create a Megaregion Working Group. Their goal: to collaborate on issues that transcended the boundaries of the 16 counties and 136 cities they collectively represented.

It took a while for the effort to gain momentum, precisely because of the sprawling nature of the megaregion. "I kept seeing these megaregion meetings pop up on my calendar and then get canceled," Corless says. "Because for elected officials to get together from across these 16 counties, it requires an entire day of travel."



Traffic approaching San Francisco. Officials from the Bay Area, Sacramento, and the San Joaquin Valley have formed a megaregion working group to address transportation and planning. Credit: peeterv via iStock.

The arrival of COVID, and the resulting turn toward conducting government business via Zoom, helped bridge that distance and give the effort momentum. "At first, we were struggling a little bit to find our focus," Corless says. Gradually, though, the participating entities began asking a simple question: "Where are we stronger together?"

Late in 2021, the Megaregion Working Group announced a list of a dozen transportation-focused projects, from highway improvements to expansion of three regional rail lines. The California high-speed rail system that's under construction—but far from completion—doesn't much play into the working group's plans, Corless says. "I have no doubt that high-speed rail will be a game changer," he says. But "if we could just get reliable medium-speed rail, we'll take that."

In fact, much of the megaregional effort is more quotidian than flashy infrastructure projects. The partners are focusing on integrating their regional plans and synchronizing their long-range planning cycles. "Because so much of our travel and even our housing markets are now intertwined," Corless says, "if we're looking out at the next 25 years, we need to be in sync."

The concept of megaregions is coming of age, Corless says, in much the same way that the rise of metropolitan planning organizations helped meet new challenges in the 1960s. "Once American cities suburbanized," he says, "you couldn't rely on the central city to do everything. People were more mobile, economies were bigger, and the issues transcended local city and county boundaries."

Moving Megaregions Forward

What will it take to push the megaregion concept—which essentially invites those metropolitan planning organizations to an even bigger table—more squarely into the public consciousness and the policy realm?

Bob Yaro thinks one answer is the climate crisis, which could push regions to work together in new ways. “I think it takes a crisis to do anything big in this country,” Yaro says. “You read these stories about whole counties running out of water. And that’s only going to get worse. [To address] the climate issue, you need both adaptation and mitigation strategies, and those mitigation strategies probably become most efficacious at the megaregion scale.”

The RGGI initiative in the Northeast offers one example of how that kind of collaboration can work; the current water crisis in the desert Southwest offers another. There, tough times have, somewhat paradoxically, made for closer connections. Communities and governments have looked toward their neighbors and realized that they can do more together.

The seven U.S. states that rely on water from the Colorado River, along with Mexico, have historically had an extremely contentious relationship. Yet, while recent headlines scream about impending water catastrophe, those parties have for more than 20 years been quietly working together on agreements intended to minimize the collective damage that they might suffer. A sense of partnership, however tenuous and prone to ongoing tensions, has been supplanting longstanding parochial attitudes toward the river.

As metro regions melt together and global challenges ramp up, a growing sense of shared fate with historically distant neighbors could help tackle all kinds of problems that might once have seemed insurmountable.

“I think one of the things we need to do is redefine ‘home,’ and the Southwest is Exhibit A on why that needs to happen,” Yaro says. “I think it’s redefining home at this larger scale. The final boundaries are going to depend on an individual

community’s sense of association with their neighbors—but the place doesn’t succeed unless we do that.” □

Matt Jenkins is a freelance writer who has contributed to the *New York Times*, *Smithsonian*, *Men’s Journal*, and numerous other publications.



Signatories to the Colorado River Basin Drought Contingency Plan, representing the U.S. government and states across the region, gather at Hoover Dam in 2019. As climate change has accelerated threats to the river, efforts to collaborate in the region have become more commonplace. Credit: U.S. Bureau of Reclamation.

REFERENCES

- Barnett, Jonathan. 2020. *Designing the Megaregion: Meeting Urban Challenges at a New Scale*. Washington, DC: Island Press.
- Florida, Richard, Tim Gulden, and Charlotta Mellander. 2008. “The Rise of the Mega-Region.” *Cambridge Journal of Regions, Economy and Society* 1(3): 459–476.
- Nelson, Garrett Dash, and Alasdair Rae. 2016. “An Economic Geography of the United States: From Commutes to Megaregions.” *PLOS ONE*. November 30.
- Yaro, Robert D., Ming Zhang, and Frederick R. Steiner. 2022. *Megaregions and America’s Future*. Cambridge, MA: Lincoln Institute of Land Policy.